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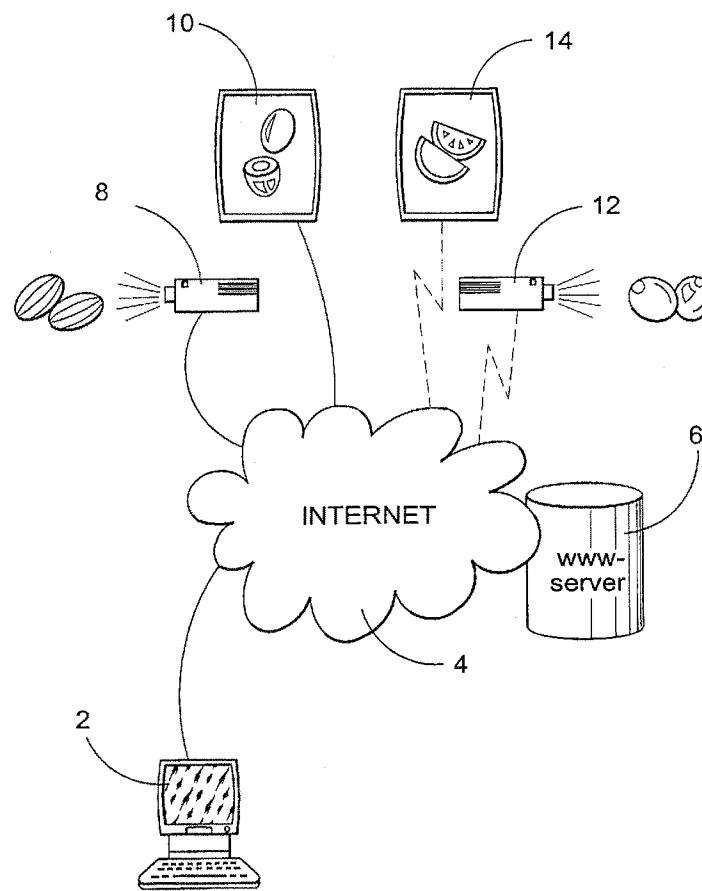
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[Continued on next page]

(54) Title: PRESENTATION OF INFORMATION



(57) **Abstract:** In a method for presenting information from information sources on presentation units (8, 10, 12, 14) transmission of information via the Internet (4) is controlled from an information administrator (6) from a chosen information source to an also chosen, addressable presentation unit for display in accordance with specification from at least one workstation (2). An information system comprises at least one workstation (2) for administrating presentation of information from information sources on presentation units (8, 10, 12, 14). The workstation can be connected to an administrative network site (6) on the Internet (4) to control the transmission of information from a chosen information source, also connectable to the Internet, to at least one chosen, addressable presentation unit, in accordance with specification from the workstation.



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## PRESENTATION OF INFORMATION

The present invention relates to a method of presenting information from information sources on presentation units, and also to an information system 5 comprising at least one workstation for administrating presentation of information from information sources on presentation units.

As a result of the rapid development on the Internet, web sites and the strong increase in electronic trading, the Internet will in all probability constitute the predominant infrastructure for electronic transmission of information and electronic trading. It is therefore desirable for the Internet to have an extension as regards exposure towards the general public in an easily accessible and simple manner, e.g. via large LCD screens and projectors, that present web sites, suitably edited, containing information, advertisements, etc. Swedish patent No. SE 10 507 473 describes a system for exhibiting information from advertising agencies, 15 for instance, on displays available to the public. The information is administrated by a digital information system comprising a control centre that, via a radio link, is connected to projector computers controlling projectors to exhibit the information.

The object of the present invention is to provide technology for displaying information such as news, weather bulletins, sports news, telegrams, advertisements and other publicity on presentation units including large viewing screens, 20 LCD-screens, luminous panels, projectors at predetermined time(s) in predetermined place(s) by utilising an Internet-based solution.

This object is achieved with a method and an information system of the type described in the introduction with the characterizing features defined in 25 claims 1 and 8.

The present invention thus enables the content of a web site to be shown on the presentation unit, which is adapted to display one-way information, or the presentation unit can be used as a traditional advertisement board that can be electronically and individually addressed and updated. Updating is performed directly via the Internet and is independent of the geographic placing of the presentation unit. The presentation units may be addressed individually or in groups. The presentation units can thus be used for displaying different messages at different 30 places and different times. The presentation units can thus also be updated individually or in groups.

In accordance with an advantageous embodiment of the method according to the invention the information is written directly in editor at the information administrator for display on a predetermined presentation unit or presentation units. The presentation units can then be continuously updated on-line via Internet, e.g. with news, sport results, Stock Exchange rates, etc.

In accordance with advantageous embodiments of the information system according to the invention wherein the communication between network site comprising WWW-server, information source and presentation unit takes place wirelessly the presentation unit is provided with a GSM receiver for communication via GSM network, in which case said server is arranged to transmit small amounts of information, such as commands, to a control unit of the presentation unit via SMTP protocol and via a mail-SMS-gateway in the form of SMS messages, and to transmit large amounts of information, such as pages containing text and pictures, to the control unit of the presentation unit by means of transmission protocol FTP or WAP technology. The existing, well-established GSM network for communication and transmission of information is thus utilised in an advantageous manner. The commands to the presentation unit are consequently provided as SMS messages and they are transmitted to each presentation unit in the form of specification of information pages to be shown, for example, showing times and manner of presentation, as well as information about the URL where original pages can be collected. Confirmations from the presentation unit to WWW-server are suitably in the form of SMS messages, by e-mail or direct connection. URL on the server can also be called from the control unit and the database directly updated, which may be the quickest way of confirming commands. For collecting and transmitting large amounts of information the control unit of the presentation unit is arranged to utilise the transmission protocol FTP or WAP technology.

In accordance with another advantageous embodiment of the information system according to the invention, the wireless communication takes place via GPRS or corresponding transmission techniques, e.g. so-called G3 technique, which provides a larger band width, which allows for the display of videos, movable pictures and animations.

In accordance with a further advantageous embodiment of the information system according to the invention the control unit of the presentation unit comprises a processor and a memory for buffer storage of information, as well as a

screen with a small picture memory to receive information from the buffer memory for display on the screen. The control unit thus receives commands in the form of SMS messages or corresponding technique and unpacks these for definition of the information to be stored in the buffer memory of the control unit. The control 5 unit then collects the information to be stored, in accordance with the command received. The information, e.g. in the form of information cells, is supplied to the buffer memory, each cell in its own place, to be subsequently shown on the screen as specified via the SMS message or corresponding techniques. Such information cells may comprise single pages, video cuttings or animations, which 10 may be shown depending on the capacity of the presentation unit, resolution and quality. The information cells can be activated in any order and at any time. The information cells to be presented can be collected from different places and different FTP sites, depending on which information is desired by the current user, e.g. advertiser, news agency or other supplier of information. The buffer memory 15 may typically hold some twenty information cells about to be shown. Each of the cells stored in the buffer memory can be addressed individually so that the cells can be replaced continuously, as identified by the address of the presentation unit and the cell number. The memory can be expanded such that the cells can hold information amounts corresponding to the need for showing streaming video and 20 live broadcasts of TV via a web site.

In accordance with another advantageous embodiment of the information system according to the invention an error page is stored in the buffer memory of the control unit for display on the screen in the event of a fault condition. Such a fault condition may be an extended interruption of the connection with the relevant 25 presentation unit, interruption in the current supply or weak batteries.

In accordance with still another advantageous embodiment of the information system according to the invention the system comprises a plurality of presentation units that can be addressed individually or in groups. From an arbitrary workstation at an optional geographic place, therefore, connection is possible to 30 the WWW-server for information administration controlling the presentation units and the information to be shown thereon. The work places are thus identified on this web site and obtain the interface previously defined depending on whether one is advertiser, user of information boards or billboards, etc. Each workstation selects via the interface which presentation units information shall be sent to,

where, and at what time the information shall be sent to each presentation unit, as well as how long it shall be exhibited. The user identity also determines which units a particular user has access to and at which times.

In order to explain the invention more in detail, selected embodiments of the information system according to the invention will now be described by way of example with reference to the accompanying drawings in which

Figure 1 illustrates in principle the general design of the information system in accordance with the invention,  
Figure 2 shows a first embodiment of the information system in accordance with the invention,  
Figure 3 shows in more detail the implementation of the communication between the units in the system in accordance with the invention,  
Figure 4 shows a second example of the design of the information system in accordance with the invention, with the main electronic components of the presentation unit,  
Figure 5 shows an embodiment of the information system in accordance with the invention, intended for electronic billboards, and  
Figure 6 shows an example of the contents in the buffer memory of the presentation unit in the system shown in Figure 5.

Figure 1 illustrates in principle the structure of the information system in accordance with the invention. A workstation in the form of a PC, Mac or UNIX-station with WWW-reader 2 is connected via the Internet 4 to a WWW-server 6. Presentation units in the form of a large picture projector 8 and LCD screens 10 are connected to the Internet 4. Presentation units are also illustrated, as alternatives, in the form of a large picture projector 12 and LCD screens 14 connected wirelessly via GSM network or corresponding, more recent techniques. From the workstation 2 information, e.g. in the form of advertisements, can be entered, and transmission and display on the presentation units 8, 10, 12, 14 are administrated with the help of the server 6 in accordance with specifications from the workstation 2. The system comprises a plurality of presentation units that can be addressed individually or in groups via e.g. TCP/IP. The system may be designed for one-way communication or for interactivity, e.g. by the use of a GSM/WAP telephone as a kind of "remote control".

In certain cases it may be practical to modify the embodiment exemplified above with permanent connections by not taking the permanent connections all the way to the workstation 2 or presentation unit 8, 10, but instead terminating the permanent connections in a terminal device "in the vicinity" of a workstation and/or 5 presentation unit, in which case the communication between workstation and/or presentation unit and associated terminal connection takes place via "Bluetooth" connection, i.e. a short range radio connection.

Figure 2 shows an embodiment with workstations 16 connected via the Internet to a WWW-server 20, which is wirelessly connected via modem 22, suitably over the GSM network, to presentation units in the form of LCD screens 24 and CRT protector 26. The server 20 is also assigned a database 28 containing such information as the identity of the LCD screens, description of screen type (size, memory, number of colours), contact person responsible, IP number or 10 GSM telephone number to the presentation unit in question, password to the presentation unit, identity of users, when information is to be displayed (date and time), on which presentation units (identity of the presentation units), which information shall be displayed, identity of information page, description, identity of advertisement, sequence number when showing pictures in sequence, display time for each picture, information as to who is authorised to book showing time on the 15 presentation units, information as to when users may book time, etc.

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It is thus possible to be connected to the server 20 from an arbitrary work place 16 at an optional geographic place, for administration of the presentation units and control of the information to be shown. The user identifies himself and obtains the interface that has previously been defined depending on whether the 25 user is an advertiser, other user of information placards, billboards, etc. The presentation units to which the information shall be sent are thus selected via the interface, as well as at which times the information shall be sent and displayed. The parameters can thus be summarised as time, i.e. start time and duration, as well as place/places, i.e. identified presentation units. Specifications concerning collecting information, times and manner of display, are then transmitted to the presentation units as described in more detail below.

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Figure 3 shows a client browser 30 connected via communication protocol HTTPS to the WWW-server 34 with its database 36 via the Internet 32. The WWW-server 34 sends commands to mail-SMS-gateway 38, e.g. Telia-DOF, via

SMTP protocol and thereafter as SMS messages. Small amounts of information are sent in this way, such as commands to the control units 40 of the presentation unit 42, as well as confirmations of various types, status information, etc. in the opposite direction from the control unit 40.

5 To receive large amounts of information such as pages of text and pictures from the Internet 32 in accordance with the commands received, the control unit 40 contacts the server 34 for the transmission of information via FTP protocol. The information is then collected as bit map pictures. Alternatively WAP technology may be used for transmitting this information. It is also technically possible to 10 transmit text and pictures as SMS packets. By alternative transmission techniques, e.g. GPRS or G3, streaming video can be transmitted.

The control unit 40 suitable comprises a processor with a buffer memory for storing information collected. The buffer memory may be dimensioned for storing typically twenty information cells. In the embodiment illustrated in Figure 3 the 15 control unit consists of a Nokia Communicator 9000. The control unit can as well be formed of a separate CPU with memory, and a separate but connected GSM, alternatively GPRS or G3 apparatus, or corresponding communication units. The control unit 40 communicates with the screen 44, e.g. an LCD screen, via the protocol RS 232. A smaller picture memory may be provided in conjunction with the 20 screen, with a capacity for a small number of image pages, typically 4-8 pages, for immediate display.

In the embodiment illustrated in Figure 3 a screen 44 is connected to control unit 42. However, several screens may be connected on the same bus, i.e. be controlled from the same control unit. The exemplified control unit, Nokia Communicator 9000, can thus control up to four screens.

Figure 4 shows another embodiment with a workstation 46 in the form of a PC, Mac or UNIX station with WWW-reader, connected to the WWW-server 48. This in turn communicates wirelessly with the presentation unit 52 via GSM transmitter 50 over the Internet 51 and the GSM network 53. As described earlier, information such as advertising material to display in the presentation unit 52, is administrated from the server 48.

The presentation unit 52 is equipped with GSM receiver 54, computer with buffer memory 56, picture memory 58 and equipment 60 for supplying power.

Figure 5 illustrates an embodiment intended for presentation of so-called electronic billboards. As in previous embodiments, a workstation 60 is provided comprising PC with WWW-reader, connected via the Internet 62 to the WWW-server 64. Advertisements and information to the presentation units 66, 68, in the 5 form of LCD screens or projectors are administrated from this server 64. The LCD screens 66 are permanently connected to the Internet 62 whereas the screens 68, alternatively, are shown wirelessly connected.

Figure 5 also shows on a larger scale an example of such a e-billboard. This comprises an LCD board 70, surrounded by a frame 71 of aluminium profiles 10 and covered with protective glass 74. The company's logotype is applied by screen printing at 72. GSM unit, computer with memory and arrangements for power supply are fitted at the rear of the screen, as described above with reference to Figure 4.

Figure 6 shows examples of stored billboard pages 78, 80, 82, 84. Each 15 page can be addressed individually and thus updated individually. The pages can be shown in sequence so that a main billboard 78 is shown for 20 seconds, for instance, after which a secondary billboard 80 is shown for 10 seconds, followed by an appendix 82 shown for 10 seconds, and a page referring to the Internet for 15 seconds. This sequence can then be continuously repeated. Switching between 20 the pages is achieved by the new page "falling" down relatively slowly, over a period of 2-4 seconds for instance, over the previous page. The eye is thus intended to observe this change.

An error page is also suitably stored in the presentation unit for display on the screen in the event of a fault condition, such as interrupted communication 25 with the presentation unit, an interruption in the power supply, etc.

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## CLAIMS

1. A method of presenting information from information sources on presentation units, **characterized** in that in accordance with specification from at least one 5 workstation the transmission of information is controlled from an information administrator via the Internet from a chosen information source to an also chosen, addressable presentation unit in accordance with said specification.
2. A method as claimed in claim 1, **characterized** in that said specification 10 comprises which information is to be displayed, on which presentation units it shall be displayed and also the showing times.
3. A method as claimed in claim 1 or claim 2, **characterized** in that the information administrator controls the presentation unit in question to collect information 15 from a chosen information source.
4. A method as claimed in any one of the preceding claims, **characterized** in that when information is being transmitted from information source to presentation unit, a low-resolution version of the information is simultaneously transmitted 20 to the information administrator by way of confirmation of the information transmission.
5. A method as claimed in claim 1 or claim 2, **characterized** in that the information is written directly in editor at the information administrator for direct display on a predetermined presentation unit or predetermined presentation units. 25
6. A method as claimed in any one of the preceding claims, **characterized** in that information administrator, presentation unit and information source are in wireless communication. 30
7. A method as claimed in any one of claims 1-5, **characterized** in that the information administrator, presentation unit and information source communicate via permanent connections.

8. An information system comprising at least one workstation for administrating presentation of information from information sources on presentation units, **characterized** in that the workstation can be connected to an administrative network site on the Internet to control transmission of information from a chosen information source, also connectable to the Internet, to at least one chosen, addressable presentation unit in accordance with given specification from the workstation.

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9. A system as claimed in claim 8, wherein the communication between network site comprising WWW-server, information source and presentation unit is wireless, **characterized** in that the presentation unit is provided with a GSM receiver for communication via GSM network.

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10. A system as claimed in claim 8, wherein the communication between network site comprising WWW-server, information source and presentation unit is wireless, **characterized** in that the presentation unit is provided with a receiver for communication via so-called G3 technique.

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11. A system as claimed in claim 9, **characterized** in that said server is arranged to transmit small amounts of information, such as commands, to a control unit of the presentation unit via SMTP protocol and via a mail-SMS-gateway in the form of SMS messages, and to transmit large amounts of information, such as pages containing text and pictures, to the control unit of the presentation unit by means of transmission protocol FTP or WAP technology.

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12. A system as claimed in claim 11, **characterized** in that the communication between workstation and server takes place via the protocol HTTPS.

13. A system as claimed in claim 8, wherein communication between network site comprising WWW-server, information source and presentation unit is wireless, **characterized** in that the wireless communication takes place via GPRS.

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14. A system as claimed in claim 8, **characterized** in that workstation and/or presentation unit can be connected via short-range radio connections to terminal devices in the vicinity which in turn are permanently connected to the Internet.

5 15. A system as claimed in any one of claims 10-14, **characterized** in that the control unit of the presentation unit comprises a processor and a memory for buffer storage of information, as well as a screen with a small picture memory to receive information from the buffer memory for display on the screen.

10 16. A system as claimed in claim 15, **characterized** in that the communication between control unit and screen takes place via the protocol RS232.

17. A system as claimed in claim 15 or claim 16, **characterized** in that an error page is stored in the buffer memory of the control unit for display on the 15 screen in the event of a fault condition.

18. A system as claimed in any one of claims 15-17, **characterized** in that the presentation unit comprises one of the following units: PC, Mac or UNIX-station with screen, LCD-screen with control unit, projector with control unit.

20 19. A system as claimed in any one of claims 15-17, **characterized** in that one and the same control unit is arranged to control several screens.

25 20. A system as claimed in any one of claims 8-19, **characterized** by a plurality of workstations and a plurality of presentation units that can be addressed individually or in groups.

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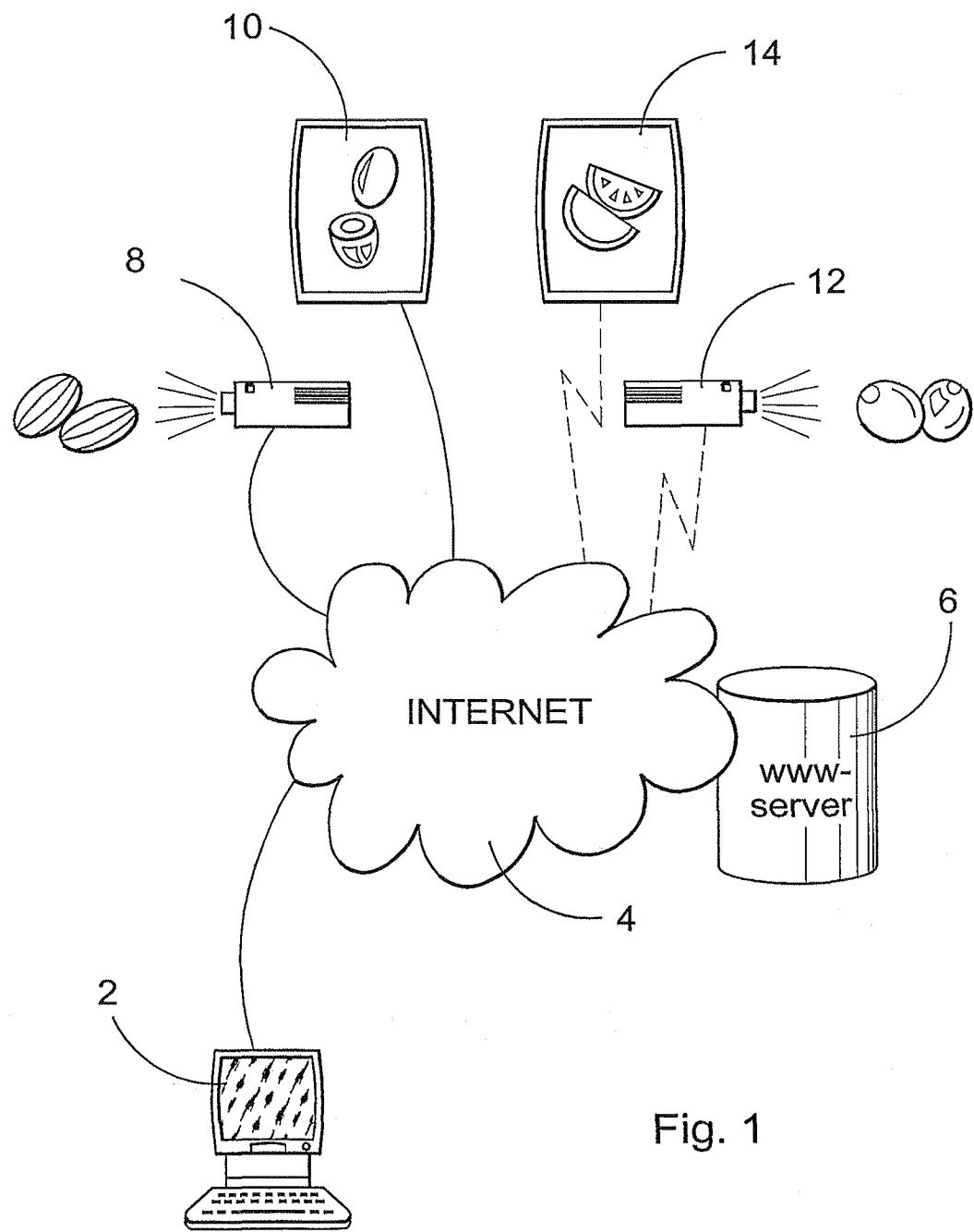


Fig. 1

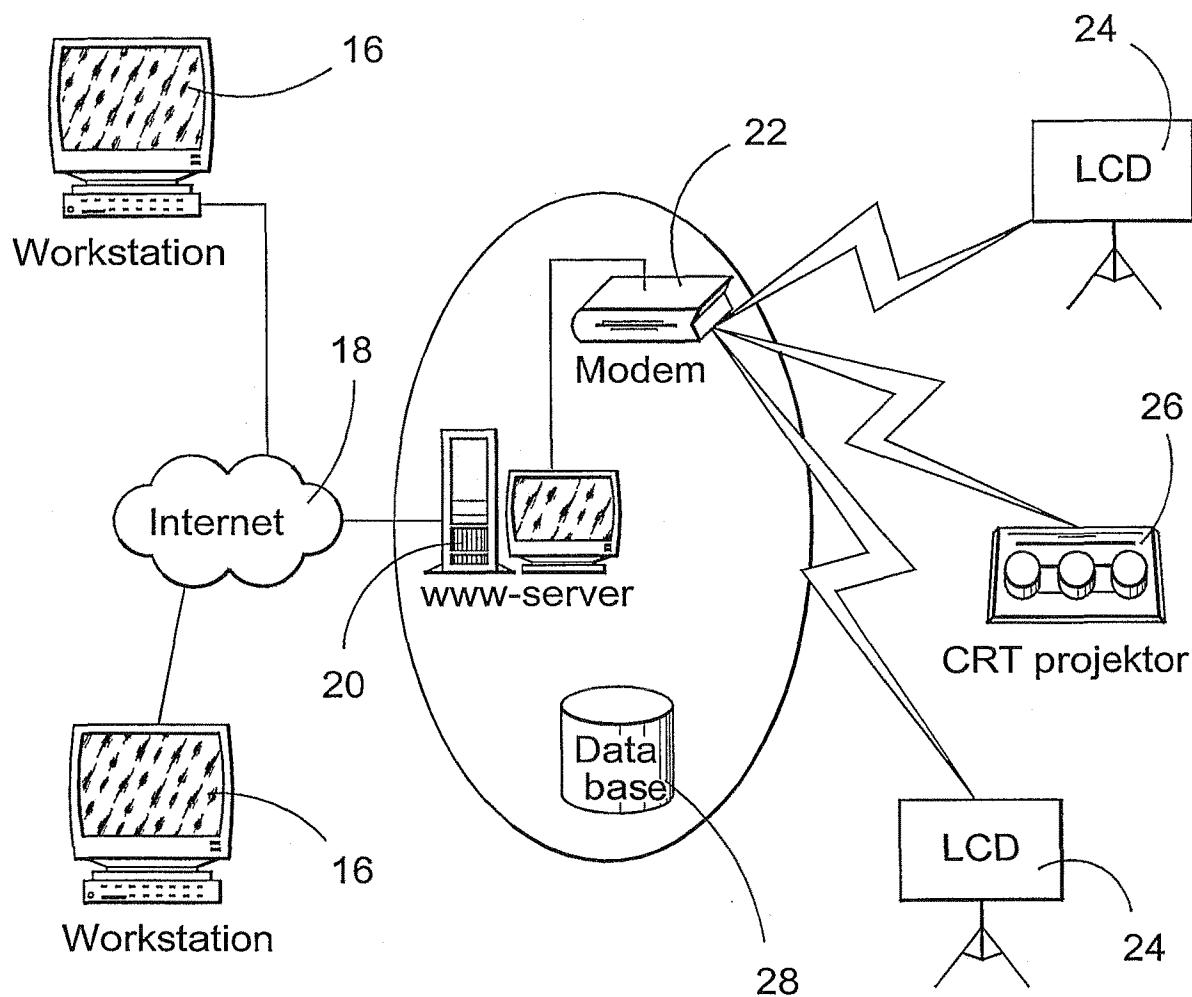


Fig. 2

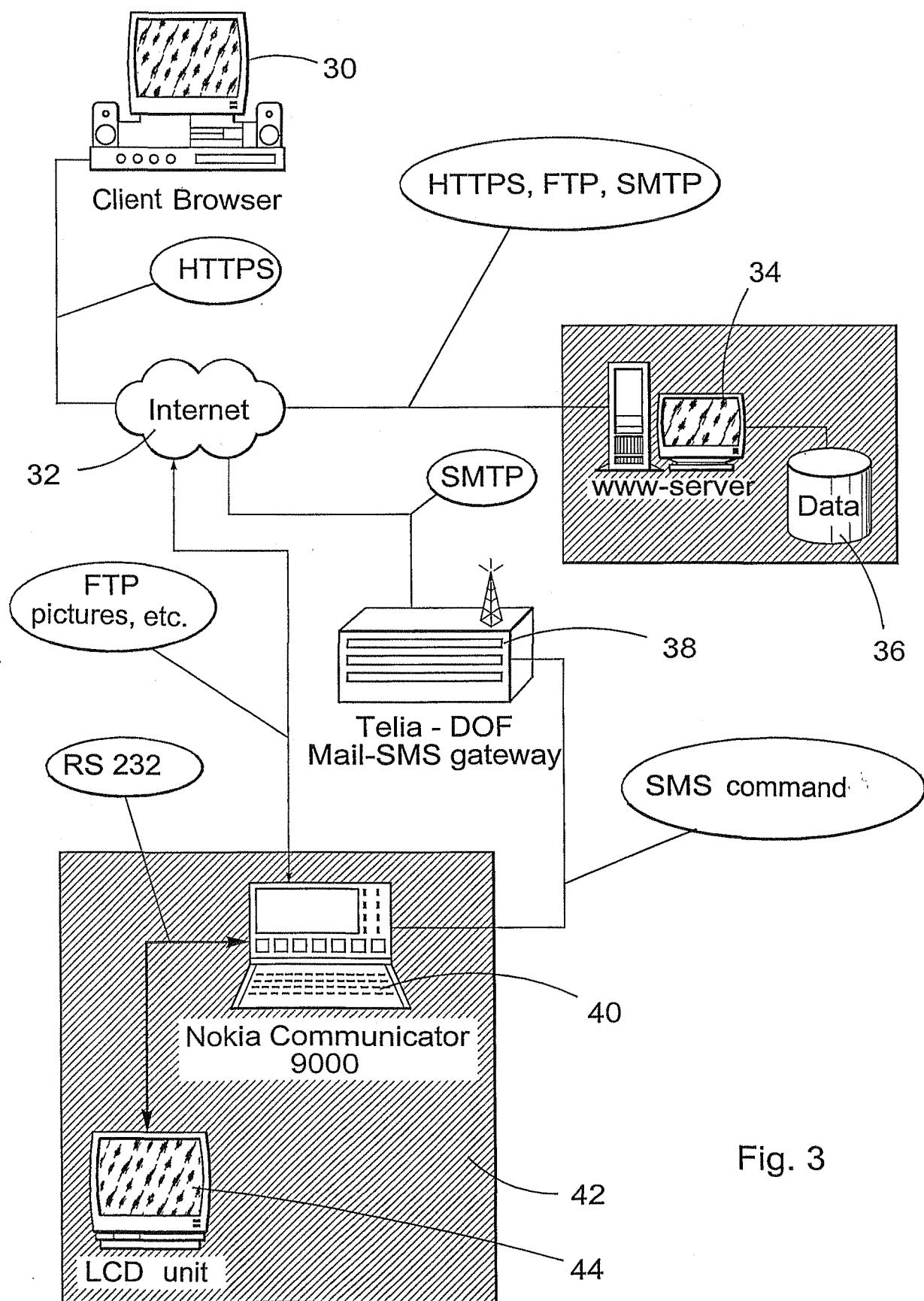


Fig. 3

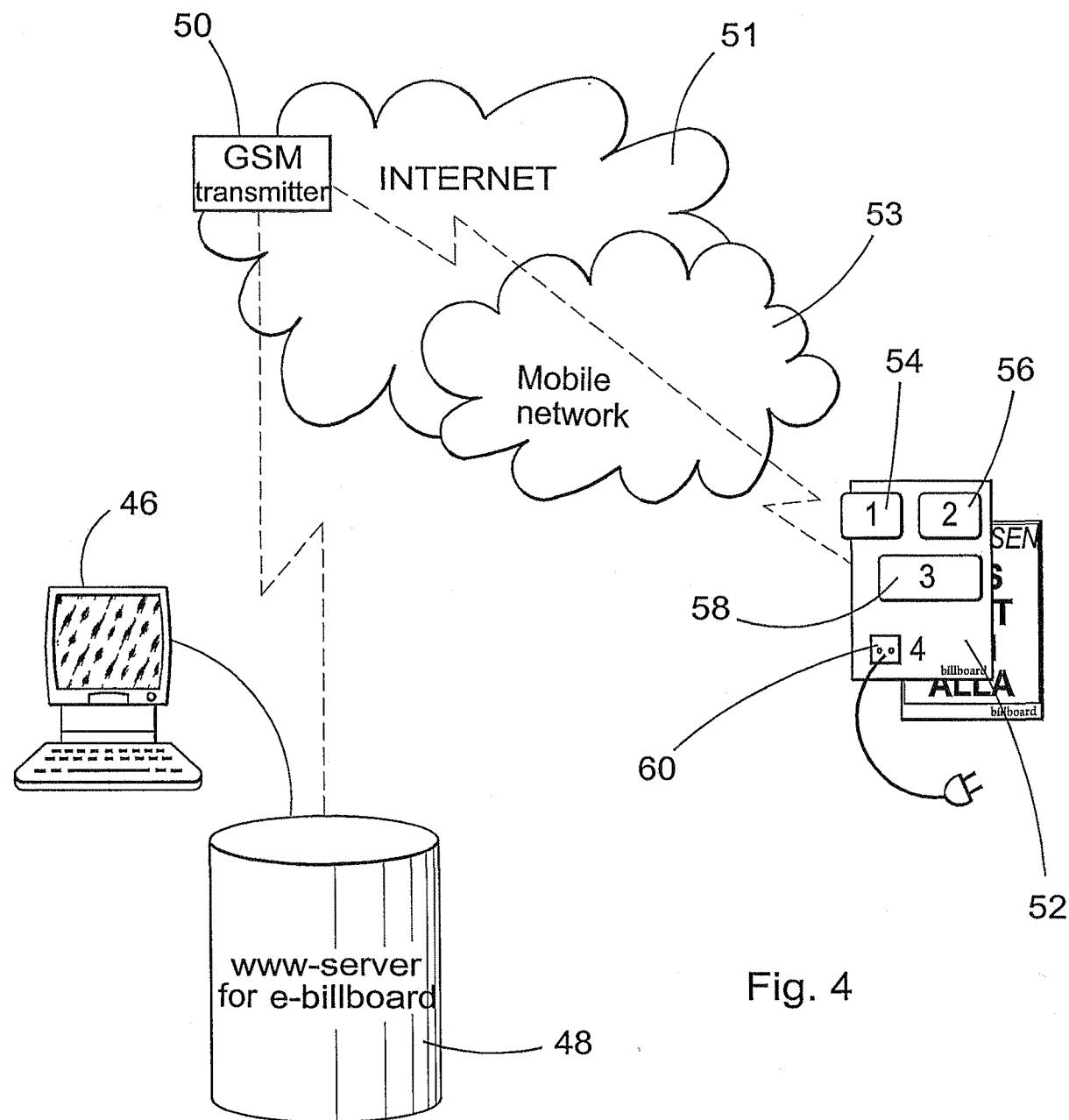
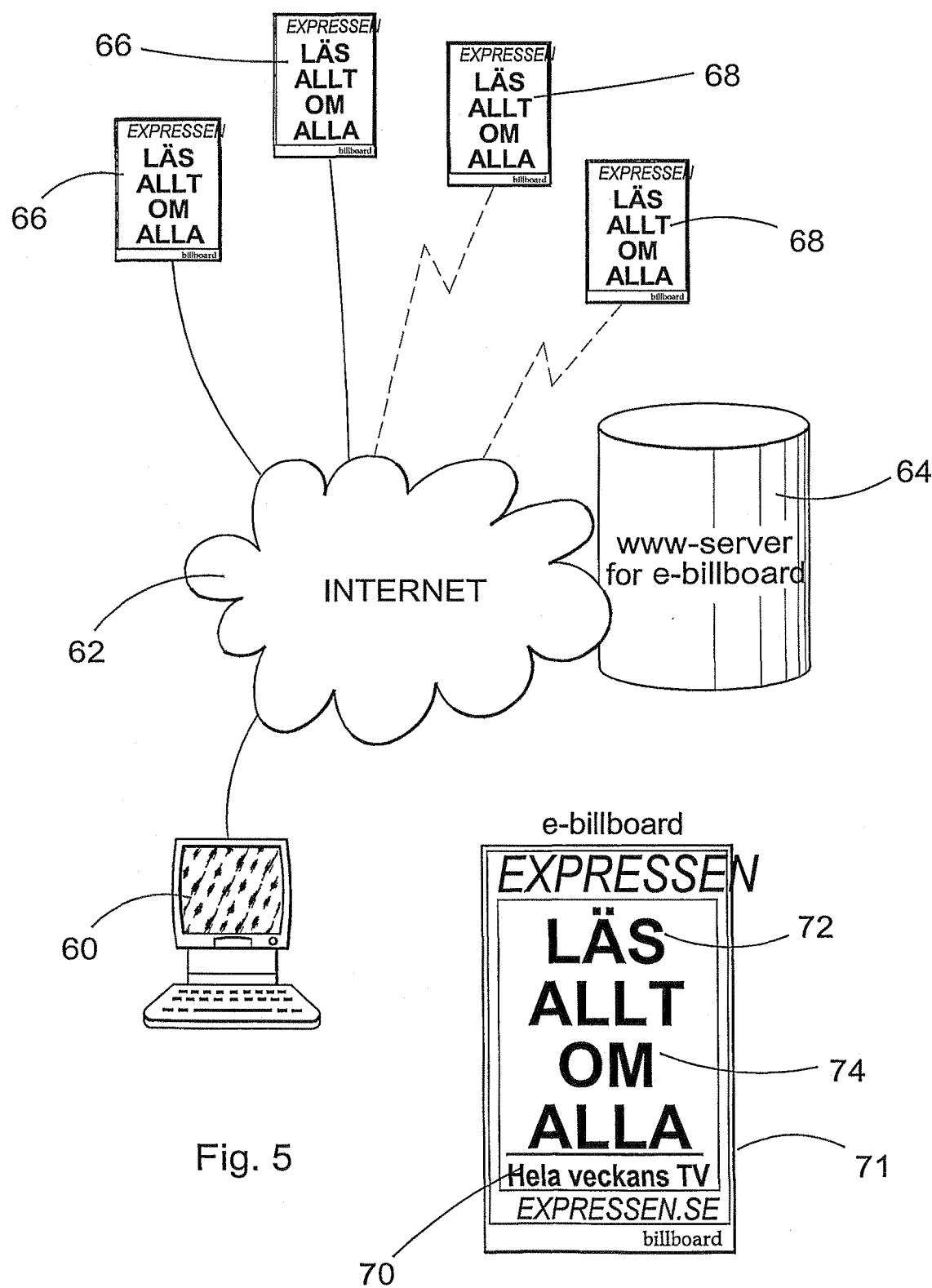


Fig. 4



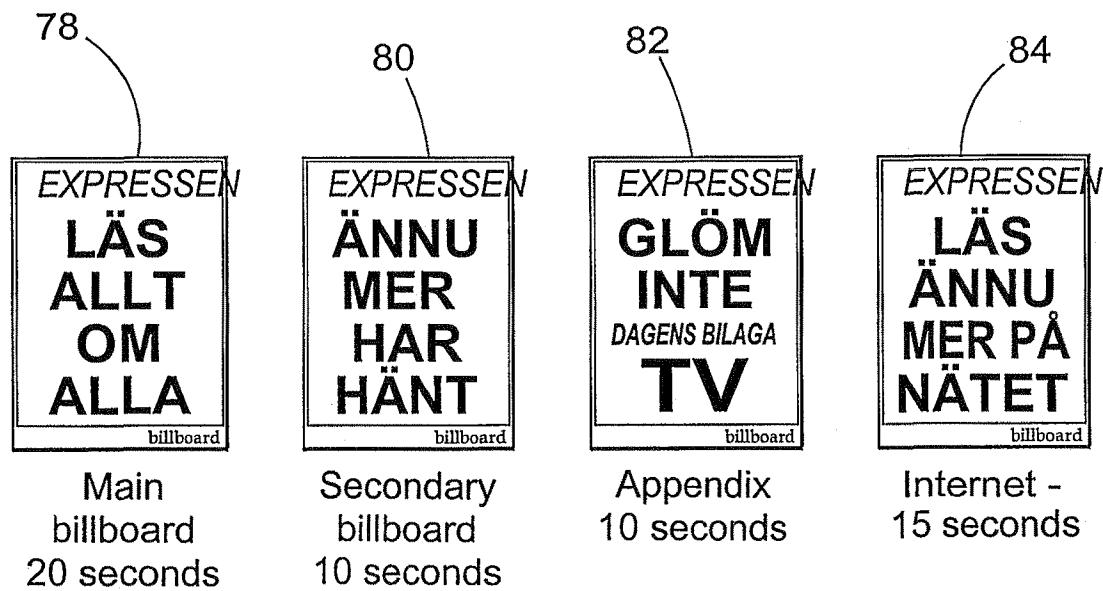


Fig. 6

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 01/01725

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G09F 19/18, G06F 17/60

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G06F, G09F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## EPO-INTERNAL, WPI DATA

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A	SE 507473 C2 (DAHLGREN, HYLIN & JONASON MEDIA AB), 8 June 1998 (08.06.98) --	1-20

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## INTERNATIONAL SEARCH REPORT

International application No.

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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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